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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,937	03/11/2004	Makoto Yoshida	FUJO 21.011	7999
26304 7590 02/04/2008 KATTEN MUCHIN ROSENMAN LLP 575 MADISON AVENUE NEW YORK, NY 10022-2585			EXAMINER JAIN, RAJ K	
			ART UNIT 2616	PAPER NUMBER
			MAIL DATE 02/04/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary

Application No.

10/799,937

Applicant(s)

YOSHIDA ET AL.

Examiner

Raj K. Jain

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7, 8, 11-16, 18, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (USP 7,058,151 B1) in view of Hyakudai et al (US 2002/0017948 A1).

Regarding claims 1 and 12, Kim discloses an automatic frequency control device in an OFDM (Orthogonal Frequency Divisional Multiplexing) system (abstract, Fig. 2), comprising: a correlation unit 21 (Fig. 2) calculating a correlation value for an incoming signal (col 2 lines 11-45);

an averaging unit 24 (Fig. 2) averaging correlation values across a plurality of symbols and a plurality of frames (col 3 lines 1-5);

a peak position detecting unit 252 detecting a peak position of the averaged correlation value (col 2 lines; 30-33, 51-55).

Kim fails to disclose a calculating a correlation value between a guard interval and data of the incoming signal and further fails to disclose controlling an oscillator based on a detected peak value.

Hyakudai discloses a calculating a correlation value between a guard interval and data of the incoming signal (Para 26) and further discloses controlling an oscillator based on a detected peak value (paras 13, 29-31) peak position values determine the error and thus how much the control oscillator 11 (Fig. 9) needs to be modified to bring the OFDM system within stability criteria's. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Hyakudai within Kim so as to improve system stability using peak position values in concert with a local oscillator to modify error range changes.

Regarding claim(s) 2 and 13, Kim discloses a peak value of the correlation value is less than a prescribed value, the oscillator is not controlled (abstract, col 2 lines 29-30, Kim discloses predetermined threshold values and its comparison with normalized auto correlated values, Hyakudai discloses oscillator control via peak values, thus reasons for combining of Hyakudai within Kim is same as for claims 1 and 12 above).

Regarding claim(s) 3 and 14, Kim discloses phase fluctuation amount obtained from the peak position of the correlation value is greater than a prescribed value, a control value of the oscillator is not updated (col 2 lines 33-40).

Regarding claim(s) 4 and 15, Kim discloses if the peak position of the correlation value is judged to be abnormal, based on statistical information of peak positions previously obtained, the oscillator is not controlled (col 2 lines 33-40)..

Regarding claim(s) 5 and 16, Hyakudai discloses if the number of detected peak positions with error greater than expected exceeds a prescribed number, an alarm is sent to a user or a higher layer to prompt control of the automatic frequency control

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device (Hyakudai discloses a manual control oscillator NCO 110 Fig. 1). Reasons for combining same as for base claims.

Regarding claim(s) 7, 8, 18 and 19, Hyakudai discloses wherein the control step based on the peak value of a correlation value smoothly changes against change of the peak value and/or phase fluctuation amount (since Hyakudai discloses a manual control oscillator NCO 110 Fig. 1 and an auto local oscillator 102a, varying minor changes will allow for smooth changes against peak values and/or phase fluctuation changes).

Reasons for combining same as for base claims.

Regarding claim(s) 11 and 22, Kim discloses an OFDM system, one skilled in the art will appreciate that the teachings within Kim can easily be extended to an OFDM-CDMA architecture due to similar technological bases of communication access schemes.

Claims 6, 9, 10, 17, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (USP 7,058,151 B1) as applied to claims 1 and 12 above, in view of Hyakudai et al (US 2002/0017948 A1), and further in view of Crawford (US 2003/0063678 A1).

Kim and Hyakudai fail to disclose modification of the width control step and/or pulling of frames for averaging.

Crawford discloses modification of the width control step and/or pulling of frames for averaging (abstract, paras 9, 10, 77, Fig. 17). Crawford provides a pilot tracking system within an OFDM based transceivers for tracking phase error that minimizes frequency errors that occur due to frequency pulling. Thus it would have been obvious

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at the time the invention was made to incorporate the teachings of Crawford within Kim and Hyakudai so as to improve OFDM synchronization by reducing frequency errors occurring due to frequency pulling and/or pushing.

Response to Arguments

Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raj K. Jain whose telephone number is 571-272-3145. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raj K. Jain

/Raj K. Jain/

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January 29, 2008